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HETEROMYSIS MEXICANA, A NEW SPECIES FROM CAMPECHE BANK, GULF OF MEXICO (CRUSTACEA: MYSIDACEA)

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Abstract.—*Heteromysis mexicana* is described from waters of Campeche Bank, southern Gulf of Mexico. Its general morphology closely resembles the eurytopic species *H. formosa* Smith, 1873, which is distributed along the western northern Atlantic in subtropical and temperate coastal waters. Available morphologic and ecologic data for 24 species of *Heteromysis* occurring in the Tropical Western Atlantic show no specific latitudinal distribution or host selectivity.

The *Heteromysis* occurring in the Tropical Western Atlantic comprise 26 species, most of which have cryptic habits (Modlin 1987c) and are associated with coralheads, anemones and sponges. The group exhibits considerable adaptive radiation. In the Gulf of Mexico 11 species have been described and 13 more occur in the Caribbean-Antillean region and the Tropical Western Atlantic (Tables 1, 2). Most records in the Gulf are limited to the eastern and northern parts.

This paper presents the description of a new species of *Heteromysis,* the first recorded for the southwestern Gulf of Mexico and summarizes the zoogeography of the *Heteromysis* species recorded in the Tropical Western Atlantic.

Materials and Methods

The specimens reported herein were collected during the research program "Oceanography of the Gulf of Mexico" (OGMEX) conducted aboard the R/V *Justo Sierra* in March 1987. Material collected has been coded as follows: OGMEX.I is the project name and cruise number, in order the following digits represent the year of collection and the station number, and in parentheses is the depth in meters. The number and sex of the individuals captured is designated as 1f (= female), 1m (= male), and 1j (= juvenile).

Hydrographic parameters and sediment texture were determined at the station. Bottom salinity and temperature were recorded with a Niels-Brown CTD sensor. The sediments obtained with a Smith-McIntyre grab were analyzed according to Folk (1969) for the sand and mud size fractions using sediment sieves and the pipette method respectively. Organic content of sediment was determined by the loss on ignition technique, and burnt to 550°C.

Samples were fixed and stored in 70% ethanol. Total length (T.L.), measured with a calibrated ocular micrometer in a dissecting microscope, is the distance along the dorsal midline from the tip of the rostrum to the posterior margin of the telson, excluding apical spines. Illustrations were made with the aid of a camera lucida.

Results

Heteromysis mexicana, new species
Figs. 1A–E, 2A–E, 3A–H, 4A, B

Type material.—Holotype: Male (T.L. 10.2 mm) collected at Campeche Bank, southern Gulf of Mexico, March 1987, obtained from a night trawl sample [OG-

Table 1.—*Heteromysis* species occurring in the Gulf of Mexico. (Additional distributional information in brackets.)

Species	Source	Quadrant
H. beetoni Modlin, 1984	Modlin (1984)	NE
H. bermudensis cesari Băcescu, 1968	Băcescu (1968)	SE (Carib.)
H. dispar Brattegard, 1970	Brattegard (1970)	SE
H. filitelsona Modlin, 1984	Modlin (1984)	NE
H. formosa, Smith, 1873	Stuck et al. (1979b)	NE (eurytop.)
	Tattersall (1951)	NE
H. gomezi Băcescu, 1970	Băcescu (1970)	SE
H. quitarti Băcescu, 1968	Băcescu (1968)	E (Keys)
H. hopkinsi Modlin, 1984	Modlin (1984)	NE
H. mariani Băcescu, 1970	Băcescu (1970)	SE
H. nouveli Brattegard, 1969	Brattegard (1969)	SE (Keys)
H. rubrocineta Băcescu, 1968	Băcescu (1968)	SE

MEX.I-87-52 (168) 1m]. Dissected and mounted on two slides and deposited in USNM, USNM 241592.

Allotype: Female (T.L. 10.3 mm) from same sample. Deposited in USNM, USNM 241593.

Paratypes: Juvenile (T.L. 5.4 mm) from same sample. Deposited in USNM, USNM 241594.

Type locality.—Campeche Bank, southern Gulf of Mexico, Mexico, between 19°31′N, 92°37′W and 19°33′N, 92°37′W.

Description.—Body robust. Carapace (Fig. 1A) with anterior margin produced into small triangular rostrum, posterior margin deeply emarginate, exposing part of thoracic segment 7 and all of 8, anterolateral lobes rounded. Eyes large, oval; cornea large, brown.

Antennular peduncle (Fig. 1B) segment 1 as long as segment 3, with four long setae on conical distolateral process and two setae near middle of distal margin. Segment 2 short with two plumose setae distodorsally. Segment 3 with male lobe located midventrally near distal margin and crowned by a

Table 2.—*Heteromysis* species occurring in the Caribbean Sea and the Western Tropical Atlantic.

Species	Source	Distribution
H. actinae Clarke, 1955	Clarke (1955)	Carib.-Antil.
H. agelas Modlin, 1987	Modlin (1987c)	Bahamas
H. bermudensis Sars, 1885	Tattersall (1951)	Bermuda-Carib.
H. bredini Brattegard, 1970	Brattegard (1970)	Antilles
H. coralina Modlin, 1987	Modlin (1987b)	Fla. Keys
H. disrupta Brattegard, 1970	Brattegard (1970)	Caribbean
H. elegans Brattegard, 1974	Brattegard (1974a)	Caribbean
H. floridensis Brattegard, 1969	Brattegard (1969)	Baham.-Fla. Keys
H. kensleyi Modlin, 1987	Modlin (1987b)	Caribbean
H. mayana Brattegard, 1970	Brattegard (1970)	Caribbean
H. mureseanui Băcescu, 1986	Băcescu (1986)	Brazilian
H. siciliseta Brattegard, 1970	Brattegard (1970)	Caribbean
H. tuberculospina Modlin, 1987	Modlin (1987a)	Caribbean
H. venezuelensis Băcescu, in press	Băcescu, in press	Caribbean
Heteromysis sp. A Brattegard, 1974	Brattegard (1974a)	Caribbean

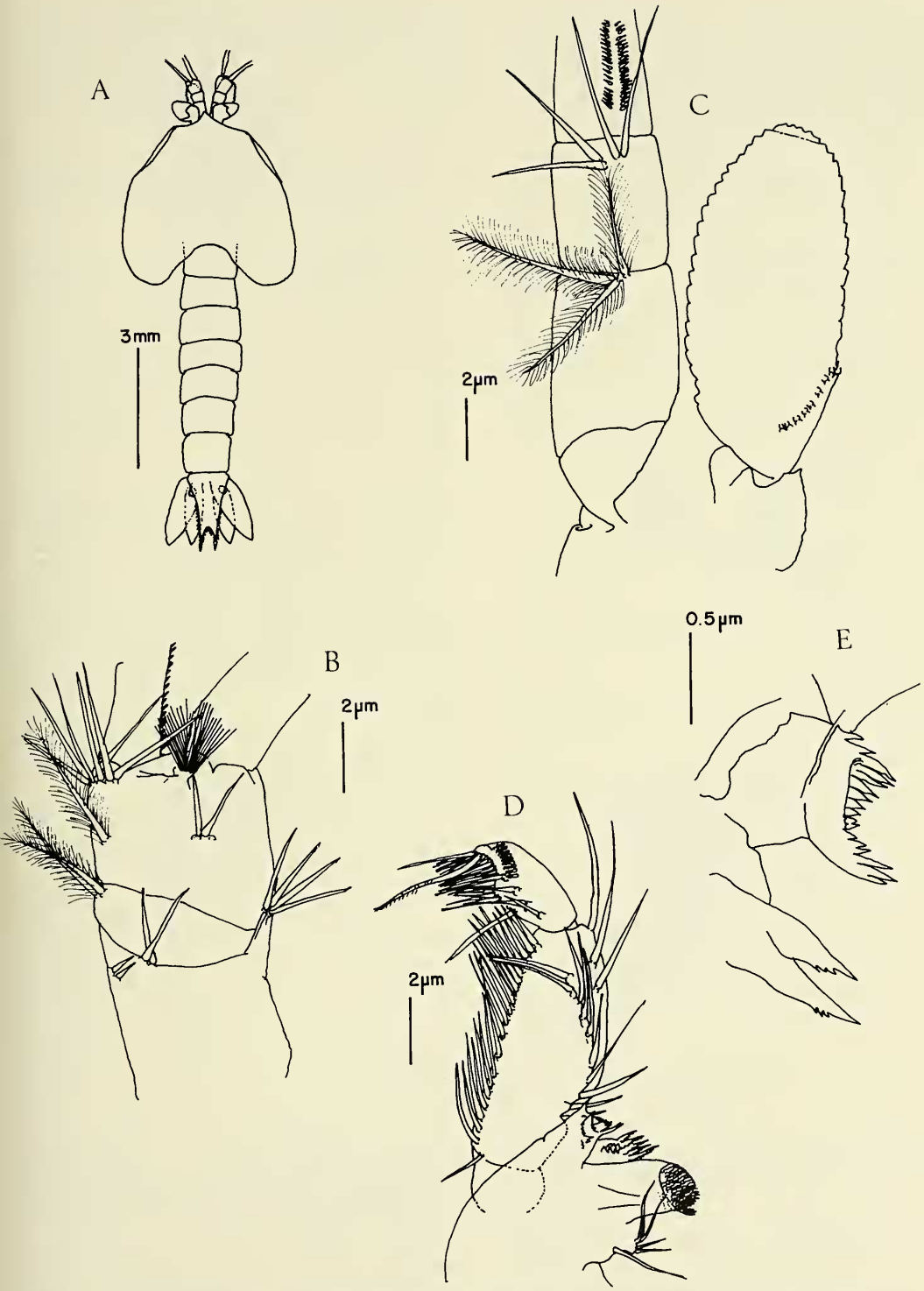

Fig. 1. *Heteromysis mexicana* (male 10.2 mm). A. Dorsal view; B. antennular peduncle; C. antennal scale; D. left mandlible and mandibular palp; E. detail of left mandible lacinia mobilis and accessory blades.

dense tuft of hairs, two simple setae ventrally at midlength, one plumose seta medially at midlength and seven setae distomedially. Antennular flagellum with stout spinules along proximal half.

Antennae (Fig. 1C) peduncle segment 1 short, compressed; segment 2 twice length of segment 1 and 1.6 times length of segment 3, with three plumose setae at middle of distal margin; segment 3 with four setae near middle of distal margin; flagellum with two rows of setules along entire length. Antennal scale as long as or slightly longer than peduncle, 2.3 times as long as maximum width with distal tip articulated; lateral margin nearly straight, medial margin convex, entire margin setose, dorsal surface with nine proximal setae.

Mouthparts (Figs. 1D, E, 2A–D), mandibular palp 3-segmented, segment 1 narrow, segment 2 broad, lateral margin with 19 simple setae, one setae in proximal dorsal position, medial margin with curved row of 10 simple setae and three simple setae distally, segment 3 lateral margin sinuous, with four long submarginal plumose setae proximally, nine surface pectinate spinules, 23–26 pectinate setae diminishing in size proximally, distally one longer robust seta.

Left mandible with short bladelike incisor, lacinia mobilis crownlike with 17 cusps longer on both ends, accessory blades in spine row with five blades, all slightly serrate on inner margin, molar process well developed with 14 rows of triturative teeth. Right mandible with three bladelike incisors, two setose accessory blades, molar process well developed with 12 rows of triturative teeth and lateral plumose setae. Maxillule well developed, outer plate with 14 apical spines and five subapical setae, middle inner margin setose, inner plate globose with four pectinate spinules, four simple setae and one hooked serrated spine on distal margin, seven plumose setae subdistally and two simple setae on lateral process. Maxillae (not figured) typical of the genus, exopod elongate with 22 plumose setae on distolateral margin. Paragnath typical of the genus with inner and outer lobe shoulders setose, mandibular process short, setose. Labrum tyical of the genus with apical margin setose.

Thoracic endopod 1 (Fig. 2E), short, robust, carpopropodus with six marginal setae and eight dorsodistally; dactylus rounded with nine pectinate setae.

Thoracic endopod 2 (Fig. 3A), ischium with 10–11 simple setae on anterior margin, merus anterior margin with seven setae; carpopropodus distally expanded with 10 spines on posterior margin, three distal setae, and four robust setae distally on anterior margin; dactylus small, rounded mitten-shaped, setose all around.

Thoracic endopod 3 (Fig. 3B), strong, short, merus and carpopropodus inflated, lacking spines characteristic of genus; dactylus ending in terminal claw.

Thoracic endopod 4 (Fig. 3C), carpopropodus with six segments, distal one with two serrated flexible spines; dactylus small with long terminal setae and ending in curved clawlike spine.

Thoracic endopod 5 (Fig. 3D) to 8, carpopropodus with five segments, increasing slightly in size distally.

Female with oostegites in thoracic segments 6, 7 and 8 well developed, increasing in size distally.

Pleopods 1 to 5 (Fig. 3E–H) not sexually dimorphic. Well developed, similar in form, unsegmented, increasing in size distally. Pleopod 1, five setae and one terminal spine on anterior surface, five plumose setae on lateral margin, five setae on pseudobranchial lobe. Pleopod 2, six setae on anterior surface, one setae on distal margin, three setae on pseudobranchial lobe, four setae on lateral margin. Pleopod 3 with 11 setae on anterior surface, two setae on distal margin, four setae on pseudobranchial lobe, four on lateral margin. Pleopod 4, 13 setae on anterior surface, three setae on distal margin, three setae on pseudobranchial lobe, four setae on lateral margin, one distally.

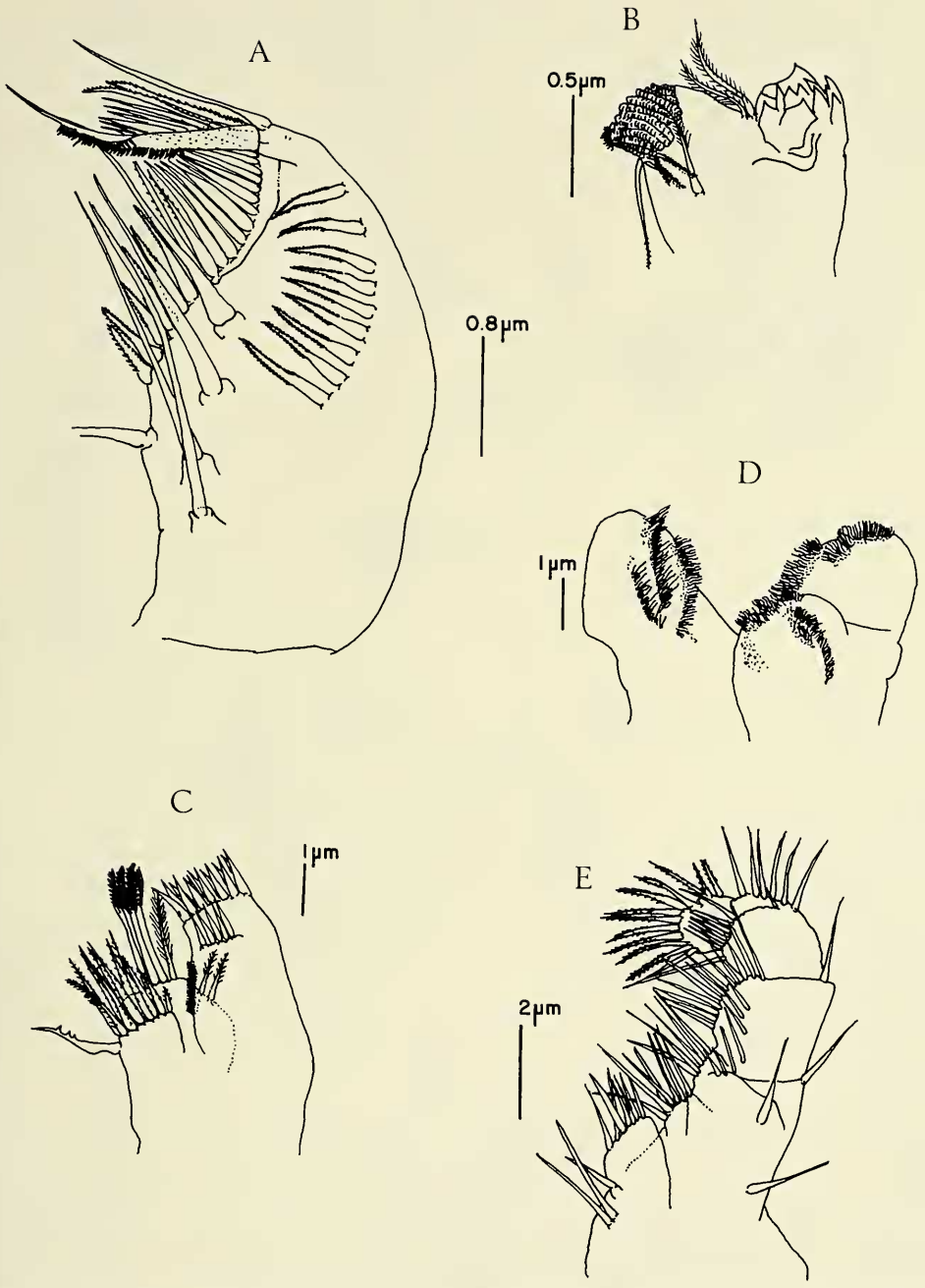

Fig. 2. *Heteromysis mexicana* (male 10.2 mm). A. Mandibular palp third segment; B. right mandible; C. maxillule; D. paragnath; E. thoracic endopod 1.

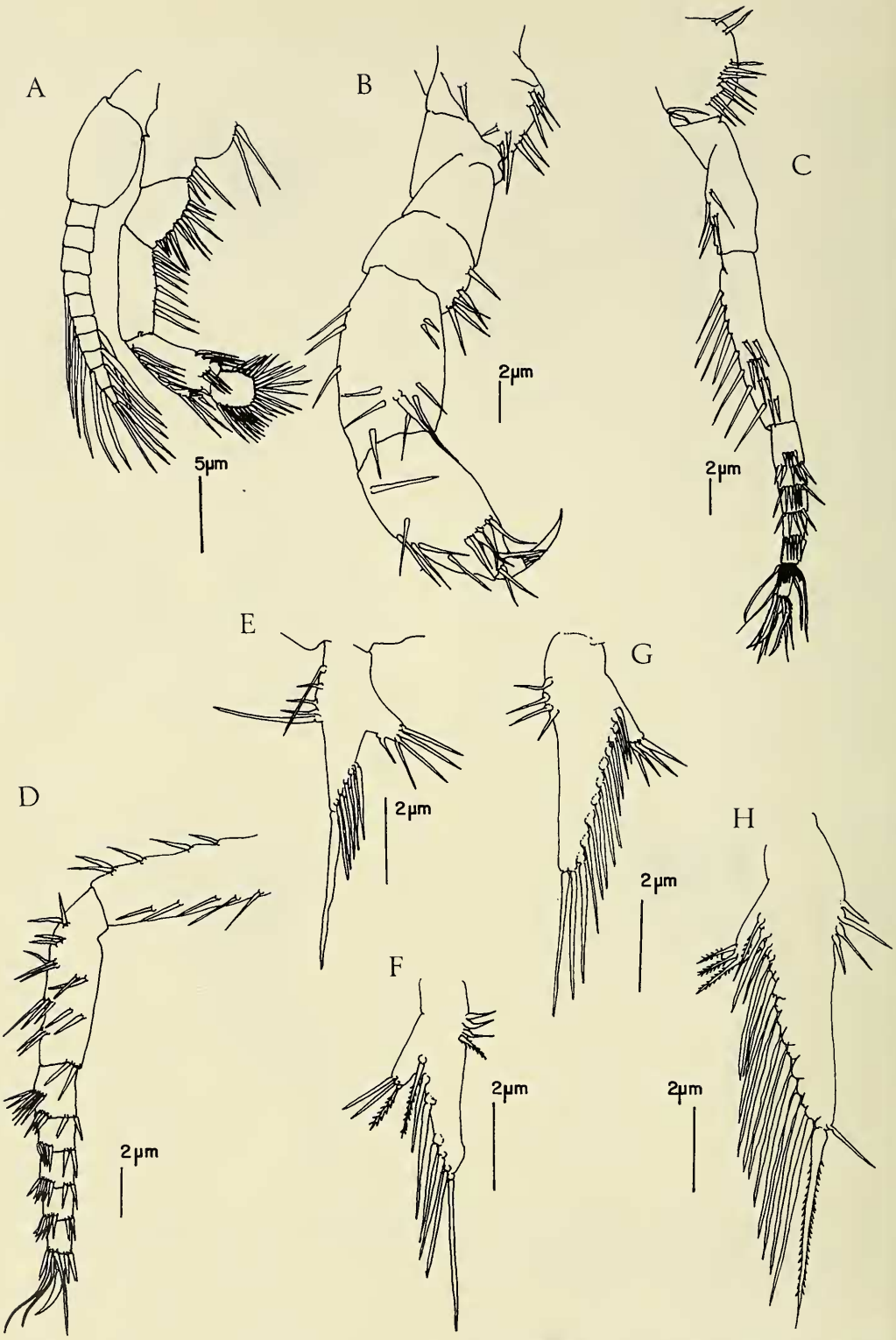

Fig. 3. *Heteromysis mexicana* (male 10.2 mm). A. Thoracic endopod 2; B. thoracic endopod 3; C. thoracic endopod 4; D. thoracic endopod 5; E. pleopod 1; F. pleopod 2; G. pleopod 3; H. pleopod 4.

Pleopod 5, 16 setae on anterior surface, four setae on distal margin, three setae on pseudobranchial lobe, four setae on lateral margin.

Uropods (Fig. 4A), exopod subequal in length to endopod, lateral margin straight, apex rounded, medial margin slightly convex, setose all around. Endopod lateral margin straight, medial margin concave with 23 stout spines, equal in size along entire margin, apex rounded, both margins with plumose setae.

Telson (Fig. 4B) 1.7 times longer than wide at base, lateral margins straight, distal half of lateral margins with 14–15 spines increasing slightly in length posteriorly; one longer apical spine on each side. Telsonal cleft completely lined with 22–23 small spines, increasing slightly in size distally; depth 0.17 times length of telson.

Remarks.—The new species closely resembles the eurytopic species *Heteromysis formosa* Smith (1873) and can be distinguished from it by morphological differences listed in Table 3 from which the most important features that separate them are the well developed male lobe on antennular peduncle segment 3; the absence of three pairs of spines on the carpopropodus of the thoracic limb 3; medial margin of uropodal endopod with 20–23 spines (14–19 in *H. formosa*) and 22–23 spines in the cleft of the telson (8–20 in *H. formosa*). Both species have in common well developed but not sexually dimorphic pleopods (Modlin, pers. comm.).

Ecological notes.—This species was an occasional component of the macrocrustacean epibenthic community from the inner continental shelf. Specimens were obtained associated with empty *Strombus gigas* shells between 19°31′N, 92°37′W and 19°33′N, 92°37′W at 168 m depth. Bottom salinity was 36.28‰ and temperature was 23.08°C. The sediment at the site was fine sand mud with an organic matter content of 23% and carbonates 11%. The behavior of hiding in gastropod shells closely resembles that reported for *Heteromysis formosa* (Clarke 1955, Brattegard 1969) and other species morphologically dissimilar, e.g., *H. bermudensis, H. mayana, H. tuberculospina* (Modlin, 1987a).

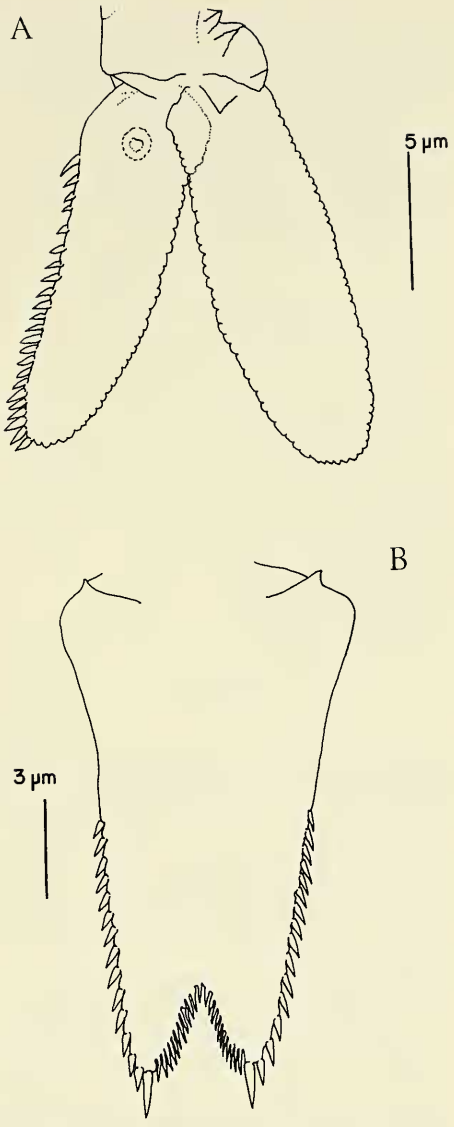

Fig. 4. *Heteromysis mexicana* (male 10.2 mm). A. uropodal endopod and exopod; B. telson.

Etymology.—Named for the country in which it was found, Mexico.

Table 3.—Comparison of *Heteromysis formosa* Smith (1873) and *H. mexicana* n. sp.

Character	*H. formosa*	*H. mexicana*
Antennular peduncle, male lobe	rudimentary[1]	well developed
Antennular peduncle segment 3	with 2 plumose setae[4]	with 1 plumose seta
Antennal scale length/breadth ratio	3[4]	2.3
Third thoracic limb carpopropodus	with 3 pairs of spines[3–5]	without spines
Uropodal endopod	with 14–16 spines[3]	with 20–23 spines
	with 17–19 spines[4]	
	with 16–19 spines[5]	
Telson lateral margin	with 12–14 spines[1]	with 14–17 spines
	with 14–16 spines[2,3]	
	with 11 spines[4]	
	with 10–18 spines[5]	
Telson cleft	with 20 spines[2,3]	with 22–23 spines
	with 8–10 spines[4]	
	with 16–13 spines[5]	

[1] Smith, 1873.
[2] Sars, 1882.
[3] Tattersall, 1951.
[4] Brattegard, 1969.
[5] Stuck et al., 1979a.

Discussion

This new species is the first report of Heteromysini for the southwestern Gulf of Mexico. The peracaridean shelf fauna in this region is largely unknown. Knowledge of it is limited to the investigations of epibenthic macroinvertebrates in Laguna de Términos (Escobar & Soto 1988) and Alvarado (Soto et al. 1986).

Twenty-six species of Heteromysids have been described in the West Tropical Atlantic (Băcescu 1968, 1970, 1986; Brattegard 1969, 1970, 1973, 1974a, b; Clarke 1955; Modlin 1982, 1984, 1987a, b, c; Sars 1885; Smith 1873; Stuck et al. 1979a, b), of which 11 have been reported from the northern and southeastern parts of the Gulf of Mexico (Table 1), and 13 have been reported from the Caribbean and the Western Tropical Atlantic (Table 2). At least 12 species are cryptic and are associated with sponges and corals. Heteromysids mostly inhabit shallow waters, but the present report of *Heteromysis mexicana* from the Campeche Bank at 168 m is among the deepest. Reports for the closely related species, *H. formosa,* reach up to 203 m in the Gulf of Mexico and 227 m in the southeastern coast of the United States (Tattersall 1951).

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